

MONTANA WATER PLAN

FINAL

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INTRODUCTION

In this plan section, the term "water storage projects" includes the construction of new storage projects and the rehabilitation and expansion of existing facilities. The term also encompasses all three types of storage. Onstream storage refers to facilities that are located on a stream or river and impound only the natural flow of that stream or river. Onstream storage may be located on either mainstem rivers or tributary streams. Offstream storage refers to facilities where the primary water supply is diverted from another water course or storage facility. Finally, nonstructural storage refers to any nonstructural or management activity that affects the timing and flow of water in a natural water course (e.g., groundwater recharge, wetlands enhancement, and watershed management).

Water storage projects provide a variety of benefits to the state of Montana. Among them, reservoirs regulate stream flows for flood control; store water for irrigation, municipal, industrial, and stock water consumption; provide opportunities for flatwater recreation and improved fisheries; and supply water for hydropower generation. Storage facilities, however, can also adversely impact recreation and aquatic and riparian habitat associated with free flowing rivers and alter aesthetic views.

The first storage projects in Montana were built to supply water for mining operations. The homesteaders who followed relied upon small irrigation projects for agricultural development in Montana's semi-arid climate. As the state's population grew, so did the size, number, and variety of reasons for constructing water storage projects. By the 1980s, the Soil Conservation Service, the Bureau of Reclamation, the U.S. Army Corps of Engineers, and the Agriculture Stabilization and Conservation Service had combined with state and private entities to develop an estimated 11,000 reservoirs in Montana. Of these, 67 reservoirs store over 5,000 acre-feet of water, while two-thirds of the reservoirs are primarily for stockwater and hold less than 50 acre-feet.

The largest water storage projects (Fort Peck, Canyon Ferry, Hungry Horse, Yellowtail, Libby, and Tiber dams) were built by the federal government. These storage facilities are used for multiple purposes, including irrigation, flood control, hydropower production, and by recreationists who take advantage of the opportunity to swim, boat, fish, and water ski. The state owns several storage projects that were constructed in the 1930s and 1940s with financial assistance from the federal Public Works Administration. Other large dams are single-purpose hydropower facilities owned by private utilities such as the Montana Power Company. A few reservoirs larger than

5,000 acre-feet were built by private groups for irrigation purposes.

It is clear that water storage has and will continue to solve many water resource problems in Montana. However, its applicability is limited by several factors, including the availability of water, technical feasibility, environmental impacts, and funding.

The planning, construction, operation, maintenance, and rehabilitation of water storage facilities is expensive. Water storage projects must often compete for scarce federal and state funds, and their priority must be determined in light of other water management activities.

THE ROLE OF STORAGE IN WATER MANAGEMENT

Montana's water management problems are diverse and vary according to site-specific conditions. No single water management tool (e.g., water storage, water use efficiency, water right transfers, or conservation) can effectively and efficiently solve all water management problems. The best water management tool for a particular problem should be selected through the following problem-solving process:

1. Define the problem. The water management problem must be adequately and appropriately defined by water users (including municipal, agricultural, recreational, industrial, commercial, and other appropriate users) and technical experts.
2. Identify all the options to solve the problem, including water storage. Potential water storage projects, both new and existing, could be identified: (1) by working with appropriate government agencies and water user groups to review, evaluate, and update existing lists of potential storage projects; and (2) during the process of developing basin-specific plans.
3. Determine whether water is physically and legally available. Existing water rights must not be adversely affected by the water management tool(s) being considered to solve a problem.
4. Select the option that best meets the following criteria:
 - a. Technical feasibility—Does it solve the problem from a technical perspective?
 - b. Financial feasibility—Do the sponsors have the ability to obtain financing and repay any capital investments as well as the associated operation, maintenance, and rehabilitation expenses?

- c. **Economic feasibility**—Do the direct and indirect benefits, both quantifiable and nonquantifiable, exceed the direct and indirect costs, both quantifiable and nonquantifiable?
- d. **Political feasibility**—Is it supported by water users, including municipal, agricultural, recreational, industrial, commercial and other affected water users?
- e. **Legal feasibility**—Can all applicable federal, state, local, and other legal requirements be satisfied?
- f. **Environmental feasibility**—Does it protect and seek to enhance social, cultural, and ecological values?

Through this problem-solving process, a water storage project could emerge as the best solution to a particular water resource problem. Where that happens, this plan section is designed to facilitate the development of the needed facilities.

This section of the state water plan is divided into three subsections. The first subsection describes how the state should set priorities among water storage projects, allocate state funds among those projects, and ensure that action is taken to complete water storage projects. The second subsection focuses on the financing of water storage projects, while the third subsection addresses the regulatory aspect of developing and rehabilitating water storage projects.

SUBSECTION 1: WATER STORAGE POLICY

BACKGROUND

State water storage policy is to some extent already defined by Montana law. Section 85-1-101(2), MCA declares that *"the public policy of the state is to promote the conservation, development, and beneficial use of the state's water resources to secure maximum economic and social prosperity for its citizens."* Section 85-1-101(4), MCA goes on to say that *"the development and utilization of water resources and efficient, economic distribution thereof are vital to the people in order to protect existing uses and to assure adequate future supplies for domestic, industrial, agricultural, and other beneficial uses."* Finally, Section 85-1-101(6), MCA notes that *"the public interest requires the construction, operation, and maintenance of a system of works for the conservation, development, storage, distribution, and utilization of water, which construction, operation, and maintenance is a single object and is in all respects for the welfare and benefit of the people of the state."*

Although these declarations of policy illustrate the importance of water development and storage to the state of Montana, they do not provide much guidance for selecting which water storage projects to pursue in light of limited state resources. Nor do they ensure that specific actions will be taken by state government to develop priority water storage projects, especially in light of other water management activities.

POLICY STATEMENT

Water storage (including the construction of new projects and the rehabilitation and expansion of existing projects) shall be considered equally with all other practical options in any search for solutions to water resource problems. When the water storage option is determined to be the water management tool that best solves the problem and promotes and enhances the general welfare of the people of Montana, then it should be actively pursued. The pursuit of water storage projects requires a strong and focused commitment by the state. Given the limited resources of the state, priorities must be established among water storage projects in order for the state to be able to make a commitment to the most important water storage projects.

ISSUES, OPTIONS, AND RECOMMENDATIONS

Issue 1 — Prioritizing New Projects

When new water storage projects are selected as the best way to resolve a particular water resource problem, the state faces the question of which projects to focus its limited resources upon. The following options present possible criteria for resolving that question. These criteria are not in any order of priority, recognizing that some may be more important than others on a site-specific basis.

Options

1. Solve the most severe problems.
2. Provide multiple uses and benefits.
3. Provide for public uses.
4. Show strong evidence of broad citizen support.
5. Have the ability to obtain non-state sources of funding.
6. Protect and seek to enhance social, ecological, cultural, and aesthetic values.
7. Improve local and state economic development.
8. Help resolve Indian and federal reserved water rights.
9. Support water conservation activities.
10. Promote the use of water reserved under Montana law.

Recommendation

The priority of new water storage projects should be established according to which projects best satisfy options 1 through 10, realizing that some of the criteria may not apply in some cases.

Issue 2 — Prioritizing Rehabilitation Projects

Several existing water storage projects in Montana are seriously in need of rehabilitation. The rehabilitation of existing projects may also help solve a variety of other water management problems, because projects may be expanded

and improved during rehabilitation efforts. However, it may be difficult to rehabilitate all existing dams due to the cost of such activities.

The estimated cost for rehabilitating several existing water storage facilities in Montana ranges from under \$200,000 to over \$5 million per site. Rehabilitating the Tongue River Dam alone will cost between \$25 million to over \$125 million, depending on the amount of risk to life and property the state and its citizens are willing to assume. The total cost for rehabilitating approximately 35 state-owned high-hazard dams, including the Tongue River Dam, is expected to exceed \$200 million.

In light of the need to rehabilitate existing water storage projects, and the cost of such efforts, the state needs to decide which facilities should be rehabilitated first. One factor affecting the effort to prioritize such projects is the Montana Dam Safety Act. This act defines a "high-hazard" dam as any dam or reservoir that, if it fails, would likely cause a loss of life. The classification of a dam as high-hazard, however, does not determine nor imply whether the dam is structurally safe. Thus, the safety of a particular dam, in addition to its classification as high hazard, must be considered in any scheme to prioritize the rehabilitation of existing water storage projects.

Options

1. **Identify the high-hazard projects most needing repair based on the criteria listed under The Role of Storage in Water Management, those listed in Issue 1, and the following criteria:**
 - a. **Protect public safety**
 - b. **Impacts of not repairing project**
2. **Breach high-hazard dams that cannot be repaired with a positive benefit-to cost ratio.**
3. **Rehabilitate all unsafe high-hazard dams by the year 2000.**

Recommendation

Option 1. The priority of rehabilitation projects should be established according to which projects best satisfy the criteria outlined in Option 1, realizing that some of the criteria may not apply in some cases.

Issue 3 — Allocating State Funds

As mentioned above, water storage projects must compete with other water management activities in terms of state and federal assistance. In addition, water storage

projects must compete among each other for limited state and federal financial and technical resources. Although the state has a limited ability to determine how federal resources are allocated, it can set priorities for allocating state funds. The question is, given the amount of state funding available for water storage projects, how should these funds be allocated? A related question, how to increase the amount of state funding available for water storage projects, is addressed in the next subsection on financing water storage projects.

Options

1. **Allocate the state funds available for water storage solely to rehabilitate existing water storage projects, particularly unsafe, high-hazard facilities.**
2. **Allocate the state funds available for water storage solely to plan and construct new water storage facilities.**
3. **Allocate a certain percentage of the state funds available for water storage for onstream, offstream, and nonstructural types of storage.**
4. **Allocate the state funds available for water storage based on the following order of preference:**
 - a. **Resolve threats to life and property posed by high-hazard facilities that are in an unsafe condition.**
 - b. **Improve and/or expand existing water storage facilities.**
 - c. **Plan and/or construct new water storage facilities, including onstream, offstream, and nonstructural.**

Recommendation

Option 4. This approach recognizes the importance of rehabilitating unsafe, high-hazard dams, but also allows for other water storage activities.

PLAN IMPLEMENTATION

Legislative Action

The legislature needs to enact legislation that explains the role of storage in water management, including the generic problem-solving process outlined above. The legislature also needs to enact legislation outlining the criteria for prioritizing new storage projects and rehabilitation projects. The legislation should specify that the Governor's Office, in cooperation with the legislature,

will have final authority for prioritizing all water storage projects.

The legislature also needs to enact legislation specifying that state funds available for water storage should be allocated according to the preferences described above.

Administrative Action

The Department of Natural Resources and Conservation needs to prepare a progress report on water storage activities and submit it to each general session of the legislature. The report should include, at a minimum: (1) the list of

water storage project priorities as determined by the governor and the legislature; (2) an implementation strategy for each priority project that identifies the resources, government actions, and political support needed to accomplish the project; and (3) the status of the priority projects.

Financial Requirements and Funding Strategies

The implementation of this subsection does not require any additional funding beyond that needed for the water storage projects themselves.

Plan Implementation Summary

<u>Activity</u>	<u>Responsibility</u>	<u>Deadline</u>
General		
Enact legislation that explains (1) the role of water storage in water management; and (2) the generic water resources problem-solving process	Legislature	April, 1991
Develop a report on water storage activities each biennium	DNRC	Ongoing
Issue 1 - Prioritizing New Projects		
Enact legislation outlining the criteria for prioritizing new water storage projects	Legislature	April, 1991
Prioritize new storage projects	Governor and legislature	Ongoing
Issue 2 - Prioritizing Rehabilitation Projects		
Enact legislation outlining the criteria for prioritizing the rehabilitation of existing water storage projects	Legislature	April, 1991
Prioritize rehabilitation projects	Governor and legislature	Ongoing
Issue 3 - Allocating State Funds		
Enact legislation outlining the preferences for allocating state funds for water storage projects	Legislature	April, 1991

SUBSECTION 2: WATER STORAGE FINANCING

BACKGROUND

The cost of constructing, operating, maintaining, and rehabilitating water storage facilities varies tremendously depending on their size, location, and site-specific geological and hydrological conditions. In light of this variation, the next several paragraphs illustrate the range of costs, in 1988 dollars, for developing, maintaining, and rehabilitating water storage projects (see Table 1).

The construction costs of existing water storage projects in Montana (excluding small stockwater and fish ponds) ranges from approximately \$50,000 (for Sturgis Dam) to \$258 million (for Yellowtail Dam). The construction costs of the majority of existing water storage facilities falls in the range of approximately \$1 million to \$4.5 million. The cost per acre-foot (based on total storage capacity) ranges from about \$45 (at Canyon Ferry) to \$2,400 (at Pike Creek Dam).

The annual cost for operating and maintaining existing water storage facilities ranges from about one-half to one and one-half percent of the total cost of construction on an annual basis. Rehabilitating and replacing water storage facilities are also expensive. The estimated cost for rehabilitating existing water storage facilities in Montana was outlined in Subsection 1, Issue 2. While historically there have been inadequate funds available for operating and maintaining some water storage facilities, funds are generally unavailable to rehabilitate and replace nearly all water storage facilities.

Finally, the estimated cost of constructing reasonably large new water storage facilities in Montana ranges from nearly \$10 million for the Johnson Creek site (with a firm annual yield of 5,000 acre-feet) to over \$215 million for the Sunday Creek site (with a firm annual yield of 215,600 acre-feet). The annual cost per acre-foot of yield (based on firm annual yield) ranges from \$38 at the Reichle Dam site (with a firm annual yield of 140,000 acre-feet) to \$378 at the Buffalo Creek site (with a firm annual yield of 27,480 acre-feet).

The estimated cost of constructing several much smaller new water storage facilities (ranging in size from approximately 5,000 acre-feet to 25,000 acre-feet) falls in a range of \$1 to \$10 million. The annual cost per acre-foot for these smaller facilities falls into a range of \$100 to \$1,000, with most of them being around \$500. The annual cost per acre-foot for a few water storage facilities, however, has been estimated at less than \$100.

Historically, federal and state governments helped initiate the development of water storage facilities by providing the necessary up-front funds for project planning and construction. Beneficiaries of the completed water storage projects then repaid, in the form of user fees, some or all of the costs attributable to such benefits (i.e., agriculture has generally repaid 10 to 100 percent on specific projects, while hydropower has generally paid 100 percent). Although many water storage projects provide fish, wildlife, recreation, and other environmental benefits, as well as flood control and navigation benefits, these direct benefi-

Table 1. Costs of Water Storage Projects

<i>Existing Projects</i>				
<u>Construction</u>	<u>Cost/Acre-foot (total storage capacity)</u>	<u>Operation & Maintenance</u>	<u>Rehabilitation</u>	<u>Rehabilitation of 35 State-owned Projects*</u>
\$50,000 to \$258 million	\$45 to \$2,400	one-half of 1% of construction	\$200,000 to \$125 million	\$200 million

* This total includes \$125 million for one project, the Tongue River Dam.

<i>New Projects</i>			
<u>Construction of Large Projects</u>	<u>Cost/Acre-foot of Large Projects (firm annual yield)</u>	<u>Construction of Smaller Projects</u>	<u>Cost/Acre-foot of Smaller Projects (firm annual yield)</u>
\$10 to \$215 million	\$38 to \$378	\$1 to \$10 million	\$100 to \$1,000

ciaries have had to pay little of the cost of these benefits (e.g., existing recreational user fees generally do not help pay for the costs of water storage facilities). Rather, these benefits have been paid for largely by the general taxpayer.

Although the federal government's interest in financing water storage projects has recently waned, there are still several funding and technical assistance programs administered by federal agencies such as the Soil Conservation Service's watershed management program and the Bureau of Reclamation's technical assistance program. In addition, the state of Montana administers several programs for funding water management activities, including water storage projects.

POLICY STATEMENT

Financing water storage is an important aspect of water development in Montana. The State of Montana should focus resources on understanding, coordinating, and improving funding programs for water storage development, operation, maintenance, and rehabilitation. Although specific financing packages must be developed on a site-specific basis, all beneficiaries should be considered for a responsible role in repaying the cost of water storage projects. The financial costs of operating and maintaining water storage facilities should be assured prior to construction, and the costs of rehabilitation and replacement should also be considered.

ISSUES, OPTIONS, AND RECOMMENDATIONS

Issue 1 - Information, Education, and Assistance

Although there are a variety of federal, state, local, private, and other sources of funding for water storage projects, it is currently very difficult to find one person or organization that understands all of the programs. As a result, potential project sponsors are unaware of and do not understand the conditions under which financing is available in the various programs.

Options

1. Document existing programs. Creating and updating a directory may facilitate the financing of water storage projects.

2. Provide public information and education on the availability of programs for financing new and existing water storage projects, in addition to the costs and benefits of water storage projects. This campaign would specify what funds are available and under what conditions.
3. Create a committee of diverse interests to facilitate efforts to finance water storage projects. This committee could serve as a clearinghouse for (1) providing public information and education, (2) developing financial packages for funding water storage projects, and (3) coordinating permitting and regulatory issues related to water storage development. This committee might be coordinated and staffed by the Department of Natural Resources and Conservation (DNRC), the Montana Water Resources Association, the Environmental Quality Council, the Water Resources Research Center, or some other organization.
4. Designate a person (in the Department of Natural Resources and Conservation, the Montana Water Resources Association, the Environmental Quality Council, or the Water Resources Research Center) as a "water storage development coordinator" to facilitate efforts to develop water storage projects. This person would serve in the same capacity as the committee described above.

Recommendation

Options 1 and 4. These options are likely to have the greatest impact on financing water storage projects.

Issue 2 - State Water Resource Funding Programs

The Department of Natural Resources and Conservation administers several grant and loan programs for a variety of water management activities, including water storage. One is the Water Development Program (WDP). According to Montana law, "*the water development program is the key implementation portion of the state water plan and shall be administered to accomplish the objectives of the plan*" (Section 85-1-602, MCA). It goes on to say that "*The storage of water for existing and future beneficial uses shall be given the highest priority [for funding] unless a water development project or activity designed to accomplish another objective is demonstrated to be more beneficial to a greater number of people*" (Section 85-1-602, MCA).

A second program is the Renewable Resource Development (RRD) Program. This program provides grants for the development of all types of renewable resources, including water. A third program is the Reclamation and Development Grant (RDG) Program. This program is designed to fund projects that mitigate the impacts of mining or meet other "crucial state needs." It is conceivable that water storage could be considered part of a reclamation program under the "crucial state need" category, but most water storage projects probably fit better under the Water Development Program or the Renewable Resource Development Program. The principle source of funding for each of these programs are taxes on the extraction of non-renewable resources.

The majority of funds potentially available under these funding programs are not allocated to water storage projects for two primary reasons. First, the Montana Legislature has diverted a significant amount of the funds originally intended for these programs to other, ongoing state programs, primarily the administration of state agencies (see Table 2). Since 1984, over \$41 million dollars was deposited in the accounts created for the WDP and RRD programs. However, only about \$19 million was allocated as grants. The trend has been that more and more of the funds deposited in the accounts are being used for other programs, and, consequently, less are available for water projects.

Second, there has been a lack of applications for water storage projects, and, consequently, available funds are allocated to other types of water projects (see Table 3). Of

Table 2. Allocation of Funds Authorized for the WDP, RRD, and RDG Programs

	<u>FYs 1984-91</u>	<u>FYs 1990/91</u>
Authorized	\$41 million	\$15.7 million
Allocated as Grants	\$19 million	\$4.6 million
Used to Fund State Agencies	\$22 million	\$8 million
Used to Fund Water Storage*	\$405,000	\$93,000

* These amounts are included in funds allocated as grants

the slightly more than \$19 million that has actually been available for grants, a total of only about \$400,000 has been used to fund water storage projects. Since the inception of the programs in 1984, a total of 32 applications have been received for loans and grants to fund water storage projects. Twenty-nine of these applications have been completely funded. Under the Water Development Program, six water storage projects have been granted about \$350,000. By contrast, 70 other projects, including municipal and rural water and sewer systems, streambank stabilization, and groundwater studies, have received about \$4 million.

Table 3. Allocation of Grants and Loans from 1984 to 1991

	<u>Water Storage Projects</u>	<u>Other Projects</u>	<u>Total</u>
Water Development Grant Program	\$350,000 (6 projects)	\$4 million (77 projects)	\$4.4 million (83 projects)
Renewable Resource Development Grant Program	\$55,000 (2 projects)	\$3.7 million (62 projects)	\$3.8 million (64 projects)
Water Development Public Loan Program	\$312,000 (3 projects)	\$22 million (46 projects)	\$22.3 million (49 projects)
Water Development Private Loan Program	\$175,000 (1 project)	\$4.1 million (69 projects)	\$4.3 million (70 projects)
Reclamation and Development Grant Program	0	\$10.8 million	\$10.8 million
Total	\$892,000	\$44.6 million	\$45.6 million

Under the Renewable Resource Development Program, 49 projects have been funded at a total cost of over \$1 million. At the same time, only two water storage projects have been funded under this program at a total cost of about \$55,000.

Under the Water Development Public Loan Program (which is financed by the sale of bonds backed by the coal severance trust fund), three water storage projects have been funded at a total cost of about \$312,000. By contrast, 46 other projects have been funded under this program at a total of over \$22 million.

Under the Water Development Private Loan Program (which is financed in part by RRD funds and the sale of general obligation bonds), 70 loans have been approved for a total of \$4.3 million, including one irrigation storage project at a cost of about \$175,000. Approximately \$5.5 million is available each biennium under the Reclamation and Development Grants Program, but to date no water storage projects have been funded.

The issue on financing in the previous section of this plan focused on how to allocate the funds available for water storage. The purpose of this issue is to explore opportunities for increasing the available amount of such funds.

Options

1. Continue public information and education on the availability of funds under these programs.
2. Encourage potential project sponsors to apply for funds.
3. Support legislative and administrative enforcement of the statutory priority for water storage projects under the Water Development Program.
4. Create a new special revenue account (the "Water Storage Special Revenue Account") to be used exclusively for funding water storage projects as identified and prioritized in Subsection 1, Issue 3, Option 4. The new account would receive 25 percent of each of the Water Development Special Revenue Account and the Renewable Resource Development Account. The funds in the Water Storage Special Revenue Account would be expended as authorized under current water development accounts, including grants, loans, and to underwrite bonds.
5. If the funds deposited in the new "Water Storage Special Revenue Account" are not used during a given biennium, the funds should be allocated to other state programs.

6. If the funds deposited in the new "Water Storage Special Revenue Account" are not used during a given biennium, the funds should accumulate rather than be transferred to other programs.
7. Seek authorization for allocating a higher percentage of existing non-renewable resource funds (e.g., coal severance tax revenues) to the development of Montana's renewable resources, particularly water.
8. Encourage state government to take a more active role in initiating water storage projects.
9. Authorize the use of 25 percent of the funds over and above the statutory minimum balance of \$100 million on the Resource Indemnity Trust (RIT) Fund for water storage projects.
10. Delete the \$100,000 cap on Water Development Program Grants for water storage projects, as currently outlined in DNRC administrative policy.

Recommendation

Options 4, 6, 7, and 9. These options are likely to have the greatest impact on financing water storage projects.

Issue 3 - Cost-sharing and Coordination

When federal funds for water storage development are available, state and local entities are usually required to provide matching funds. However, it is often very difficult for state and local entities to come up with their appropriate share of funds. In view of this situation, the options outlined below are designed to (1) improve the ability to satisfy the cost-sharing requirements; (2) generate funds for operating, maintaining, rehabilitating, and replacing existing storage facilities; and (3) generate funds for constructing projects without federal financial aid.

Options

1. Pursue water storage projects only if they have local and state support and a realistic ability to comply with federal cost-sharing requirements.
2. Creatively utilize all available state, local, and private sources of funding to satisfy federal cost-sharing requirements.
3. Encourage Resource Conservation and Development areas (RC&Ds) to develop funding packages and create broad-based coalitions to support water storage development.

4. Make use of existing authorities associated with public entities such as conservancy districts, irrigation districts, and water and sewer districts to tax and collect fees for purposes of funding water storage projects. If existing public authorities are not adequate for the proposed purposes, make the appropriate modification.
5. Establish, on a site-specific basis, special improvement districts, rural improvement districts, conservancy districts, multi-conservation district special project areas, or some combination thereof to help raise funds for water storage projects.
6. Identify potential sources of private sector funding and integrate these on a site-specific basis. These sources might include contributions from various water user groups, such as irrigators, industries, recreationists, conservation and preservation groups, and others.
7. Increase state taxes and designate the additional funds to water storage development.
8. Encourage the state or a coalition of private investors to purchase federally owned water storage projects and operate them to generate funds for operation, maintenance, and new storage projects.

Recommendation

Options 3, 4, and 6. These options are likely to have the greatest impact on financing water storage projects.

Issue 4 - Payment by Beneficiaries

If water storage projects are to be developed or rehabilitated in the future, a diversity of funding sources will be needed. In addition to using federal, state, and private funds, another possibility is to encourage or require all beneficiaries to play a responsible role in financing the projects. The funds generated from this approach could be used to help finance a portion of water storage projects, including planning, construction, operation, maintenance, rehabilitation, and replacement.

The funds raised under any one of the following options would not generally be relied on to repay the entire cost of a project.

Options

1. Continue having irrigation, hydropower, municipal, and industrial beneficiaries repay some

of the project costs through user fees, and allow the sponsor together with the funding source to make site-specific recommendations on whether those fees will adequately cover the costs of the benefits.

2. Conduct a study on the feasibility of having recreational beneficiaries repay a portion of the project costs associated with recreational opportunities. Among the options that might be assessed are:
 - a. A fee, on a site-specific basis, to individuals who take advantage of the recreational benefits associated with water storage projects funded with public resources. Like an entrance fee to a state or national park, the fee would be assessed each time a person participates in some recreational activity related to the water storage project. An annual user's pass would also be available for each site. The funds generated from the fee would be designated for water storage development that includes recreational or fish and wildlife benefits.
 - b. A "water development" stamp. This stamp would be required of anyone purchasing a fishing, duck hunting, boat, or other water-related license. The funds generated from this stamp would be designated for water storage development that includes recreational or fish and wildlife benefits. Such funds would have to be controlled in a manner consistent with state-federal requirements outlined in Section 87-1-701-714, MCA.
 - c. An increase in the Motorboat Fuels Tax to be used for water storage development that includes recreational or fish and wildlife benefits.
 - d. A generic "land and water conservation" license for anyone using public lands or water. At least some of the money generated from these licenses would be designated for water storage development that includes recreational, fish and wildlife, and/or environmental benefits. Such funds would have to be controlled in a manner consistent with state-federal requirements outlined in Section 87-1-701-714, MCA.
 - e. The Department of Fish, Wildlife and Parks providing appropriate funds on an individual project basis through agency funding mechanisms.

3. Continue to use tax revenues to provide a portion of fish, wildlife, recreational, and other environmental benefits associated with water storage projects.
4. Continue to use tax revenues to provide flood control and navigation benefits associated with water storage projects.
5. Continue to use tax revenues to provide a portion of the irrigation, municipal, industrial, and hydropower benefits associated with water storage projects.
6. Charge individuals and groups that benefit from the flood control and navigation benefits of a new water storage project. Create one of the several resource districts possible under Montana law to collect fees and/or require beneficiaries to pay taxes.
7. Require downstream states to financially compensate Montana for the impacts of upstream reservoirs that largely benefit downstream users.

Recommendations

Options 1, 2, 3, 5, and 6. These options are likely to have the greatest impact on financing water storage projects.

Issue 5 - Economic Value of Alternative Uses

The appropriate role of each beneficiary in financing water storage projects might be based on the economic value of the benefits received and the ability of the beneficiary to pay. The problem is that, while it is relatively easy to determine the economic value of hydropower, municipal, and agricultural uses of water, it is much more difficult to estimate the economic value of secondary benefits (e.g., local and state economic development) and other direct benefits (e.g., recreation; fish and wildlife protection; wetlands and riparian habitat preservation; augmentation of flows for water quality, instream flow protection, groundwater recharge, and late season irrigation; and downstream navigation).

Options

1. Conduct research designed to identify all the potential benefits associated with water storage projects, estimate the economic value of all these benefits on a per acre-foot basis, assess the validity of methods used to estimate such values, and generate data that

can be meaningfully compared (e.g., estimate all the values in terms of acre-feet).

2. Conduct research designed to estimate the value of secondary economic benefits related to water storage development, such as rural and local economic development.

Recommendation

No recommendation. While this is an important issue, it is not a high priority. It could be integrated into the study outlined in Issue 4, Option 2.

PLAN IMPLEMENTATION

Legislative Action

The legislature needs to authorize one new staff position for a "water storage development coordinator" in the Department of Natural Resources and Conservation.

The legislature needs to create a "Water Storage Special Revenue Account" and amend Section 85-1-601 et seq., MCA to allocate 25 percent of the Water Development Special Revenue Account to the new account. Section 90-2-101 et seq., MCA, which deals with the Renewable Resource Development Account, needs to be similarly amended. The legislation should specify that the funds in this account will be used exclusively for water storage projects. In addition, the legislation should specify that, if these dedicated funds are not used during a given biennium, they should accumulate rather than being used to support other programs.

The legislature needs to reallocate more non-renewable resource funds (e.g., coal severance tax revenues) to the development of renewable natural resources, particularly water. The legislature also needs to adopt a provision in Section 85-1-604 and Section 15-38-202, MCA to authorize the use of 25 percent of the funds over and above the statutory minimum balance of \$100 million on the revenue from the Resource Indemnity Trust for water storage projects.

Administrative Action

The Department of Natural Resources and Conservation needs to hire (or, in the event that the legislature does not authorize a new position, the DNRC would need to reallocate an existing position for) a water storage development

coordinator to document existing federal, state, local, private, and other sources of funding for water storage projects; facilitate efforts to develop water storage projects; identify potential sources of funding in the private sector and include these in funding packages for specific projects; help develop a biennial report on water storage activities, as outlined in Subsection 1; and perform other duties as assigned.

The Department of Fish, Wildlife and Parks, in cooperation with the Department of Natural Resources and Conservation, needs to study the feasibility for having recreational beneficiaries repay some of the project costs associated with recreational benefits.

Resource Conservation and Development Areas and existing districts need to develop funding packages and

support water storage development. They also need to develop mechanisms to charge flood control and navigation beneficiaries.

Water storage development sponsors should continue to use tax revenues for a portion of irrigation, hydropower, municipal, industrial, fish, wildlife, recreational, and other environmental benefits related to water storage projects.

Financial Requirements and Funding Strategies

Sufficient funds will need to be authorized both legislatively and administratively to hire a water storage development coordinator and for the coordinator to carry out his or her responsibilities. Adequate funds will need to be authorized to conduct a study on the feasibility of recreational user fees.

Plan Implementation Summary

<u>Activity</u>	<u>Responsibility</u>	<u>Deadline</u>
Issue 1 - Information and Education		
Hire a water storage development coordinator	Legislature and DNRC	June, 1991
Document programs	Water storage development coordinator	January, 1992
Issue 2 - Water Development Programs		
Create a water storage special revenue account	Legislature	April, 1991
Reallocate more non-renewable resource funds to renewable resource development	Legislature	April, 1991
Authorize RIT funds for water storage	Legislature	April, 1991
Issue 3 - Cost-sharing and Coordination		
Develop funding packages and coalitions	RC&Ds and existing districts	Ongoing
Integrate private sources of funding	Water storage development coordinator	Ongoing
Study and make use of existing authorities to tax and collect fees for water storage projects	Water storage development coordinator	Ongoing
Issue 4 - Payment by Beneficiaries		
Assess the appropriateness of fees paid by irrigation, hydropower, municipal, and industrial beneficiaries	Water storage development coordinator	Ongoing
Conduct a study	DFWP and DNRC	June, 1992
Charge flood control and navigation beneficiaries	RC&Ds and Water Storage Districts	Ongoing
Use general tax revenues for a portion of irrigation, hydropower, municipal, and industrial, fish, wildlife, recreational, and other environmental benefits	Water storage development sponsors	Ongoing

SUBSECTION 3: WATER STORAGE REGULATIONS

BACKGROUND

The planning, construction, operation, maintenance, and rehabilitation of water storage facilities in Montana is regulated by a multitude of federal, state, and local laws and administrative rules as well as international, interstate, and tribal treaties and compacts. In those laws, rules, and agreements, various requirements are designed to protect public interests in water appropriation and use, health and safety, environmental conservation, and cultural site preservation.

Examples of regulations that protect the interests of Montana's citizens include the Montana Water Use Act, which provides for the granting of water rights for a wide diversity of beneficial water uses including water stored for irrigation, hydropower, and recreation. Other laws regulate water storage by requiring minimum streamflows to maintain water quality and by governing construction of storage facilities to protect public health and safety. Examples include the Federal Safe Drinking Water Act, the Federal Power Act, the Montana Dam Safety Act, and local flood plain ordinances. Laws such as the Federal Endangered Species Act, Wild and Scenic Rivers Act, and National Historic Preservation Act guard environmental and cultural values by prohibiting storage or requiring mitigation where storage may impact natural resources, important wildlife species, or historical sites.

The state also has obligations under international, interstate, and tribal treaties and compacts that may limit the availability of water for storage. For example, the 1909 Boundary Waters Treaty between the United States and Canada provides for the division of flows in the Milk and St. Mary rivers. The Yellowstone Compact is an interstate agreement allocating basin water between Montana, Wyoming, and North Dakota. Indian tribes have rights to use water under state and federal laws.

The laws, regulations, and agreements applicable to water storage are summarized in the water storage regulations background document which is available from the DNRC upon request. A preliminary review indicated that some requirements may unduly hinder water storage development in Montana. The identified issues are addressed in this water plan section.

POLICY STATEMENT

Water storage is one of several tools available for managing Montana's water resources. A substantial number of laws and regulations affect water storage activities

and are necessary to protect vital public interests and environmental values. The state of Montana should act to ensure that laws and regulations are reasonable and properly administered to allow for the use of storage as a viable water management tool.

ISSUES, OPTIONS, AND RECOMMENDATIONS

Issue 1 - Duplicative Laws and Regulations

Some laws and regulations contain duplicative requirements, result in overlapping administrative authorities, and set forth conflicting definitions. For example, high-hazard dams in Montana located on certain national forest land are governed by similar requirements under the Montana Dam Safety Act, Federal Land Policy and Management Act, and federal Wilderness Act. In addition, definitions of such terms as "navigable" and "stream bed" differ between laws and may be inconsistent. As a result, water storage development and operation may be unnecessarily cumbersome and confusing.

Options

1. Identify unnecessary duplications and inconsistencies and recommend corrective measures. This evaluation could address one or more of the following issues.
 - a. Identify duplicative requirements, overlapping administrative jurisdictions, and inconsistent definitions of common terms.
 - b. Identify federal laws whose administration could be assumed by the state to improve efficiency and enhance sensitivity to local problems and concerns.
 - c. Identify overlapping state regulatory authority.
2. Designate a lead agency to coordinate all water storage permitting.
3. Take no action. The existing requirements, authorities, and definitions are appropriate to manage the resource.

Recommendation

Option I. The evaluation and corrective measures will streamline regulation of water storage development.

Issue 2 - Costs Related to Dam Safety

Structural repairs or construction of existing and proposed high-hazard dams may be prohibitively expensive. One factor affecting costs are dam safety regulations. The Montana Dam Safety Act establishes the degree of risk to life and property that is acceptable with respect to a high-hazard dam, defined as any dam or reservoir that, if it fails, would likely cause a loss of life. Classification as a high-hazard dam does not imply nor determine whether or not the dam is structurally sound. If risks to public safety are increased—for instance, accepting more than one lost life or allowing a lower minimum spillway capacity—the costs of rehabilitating existing dams and building new facilities would decrease. Conversely, increased safety raises costs. In general, the administrative rules implementing the Montana Dam Safety Act require high-hazard dams to satisfy federal standards. However, standards in the Montana Dam Safety Act for designing spillways are less stringent than federal standards.

The administrative rules implementing the Montana Dam Safety Act require that, by July 1, 1995, existing high-hazard dams, as identified by the Corps of Engineers in 1981, must obtain an operating permit from the Department of Natural Resources and Conservation verifying that the dams satisfy safety standards. To date, studies have been completed on only approximately 33 of 85 high-hazard reservoirs to determine the modifications needed to satisfy the standards. Costs of rehabilitating state-owned high-hazard dams is expected to exceed \$200 million. The costs of engineering studies and rehabilitation construction may be prohibitively expensive, thereby causing a delay or an inability to meet dam safety standards.

Options

1. Revise the Montana Dam Safety Act to increase the acceptable degree of risk to public safety and to reallocate responsibility for that risk between the public, government, and dam owners.
2. Repeal the Montana Dam Safety Act and defer all dam safety activities to the federal government.
3. Evaluate the Montana Dam Safety Act and implementing regulations to:
 - a. Determine the acceptable degree of risk to public safety and appropriate allocation of responsibility for that risk between the public, government, and dam owners.
 - b. Determine whether the definition of a high-hazard dam should be modified.

- c. Determine whether the high-hazard classification should be expanded into a risk scale that allows structural design requirements to reflect probable risk to life and property.

- d. Determine whether the Department of Natural Resources and Conservation should be given greater discretion to substitute alternative means of addressing risks, such as early warning systems, for structural design requirements.

4. Take no action. The current provisions of the Montana Dam Safety Act appropriately address dam safety concerns.

Recommendation

Option 3. Dam safety is an important public policy issue, and acceptable risks to public safety must be determined. In recommending Option 3, the State Water Plan Advisory Council acknowledges that the DNRC should assess alternative means of addressing risks, such as requiring early warning systems and balancing risks with consequential costs, and initiate rulemaking as appropriate.

Issue 3 - Inability of Private Entities to Obtain Water Reservations

Under the Montana Water Use Act, only public entities may apply to reserve water for existing and future beneficial uses, including those involving the storage of water. Private entities are prohibited from directly obtaining water reservations. Another way to secure water for future uses is to extend the time limit for developing water rights. Excluding private entities from acquiring water reservations may preclude some private development of water storage having public benefits. In addition, while the Montana Water Use Act allows water reservations for multi-purpose uses, there may be perceptions that water reservations are for single-purpose uses only.

Options

1. Revise the Montana Water Use Act to allow private entities to obtain water reservations.
2. Revise the Montana Water Use Act to extend the 10-year limit on developing water use permits associated with water storage development.
3. Provide public education to encourage water reservations for multipurpose uses.

4. Designate or create a public body to advance water reservation applications for private entities.
5. Evaluate the Montana Water Use Act and the desirability of:
 - a. Allowing private entities to obtain water reservations.
 - b. Designating or creating a public body to advance water reservation applications for private entities.
6. Take no action. The Montana Water Use Act appropriately guides beneficial water uses.

Recommendation

Options 2, 3, and 5. By extending the time limit for developing water rights associated with water storage, private development of storage projects will be facilitated. The policy restricting water reservations to public entities should be re-evaluated to determine whether the public use preference should stand.

Issue 4 - Lack of Information about Water Storage Laws

No comprehensive source of information exists on the laws and regulations affecting the development and operation of water storage projects. Consequently, potential project developers may be unaware of the legal requirements that must be met as well as the resources available for assistance. Development of water storage projects may be facilitated by easy access to this information.

Options

1. Prepare, distribute, and regularly update (1) a directory of laws and regulations applicable to water storage, and (2) a booklet describing the major requirements and identifying administrative agencies; both suitable for use by laypersons.
2. Develop and administer a targeted program of education to promote awareness of legal requirements and sources of information applicable to the development and operation of water storage projects.
3. Designate a person to serve as an information coordinator for permitting and regulatory issues related to water storage development.

Recommendation

All options. These activities would make information accessible and assist in the proper development of water storage facilities.

Issue 5 - Repairing Wilderness Area Dams

Rules and regulations pursuant to the Wilderness Act may constrain the maintenance or rehabilitation of dams in wilderness areas. The use of mechanized equipment in designated wilderness areas for maintenance or rehabilitation is prohibited, except where such use was practiced prior to wilderness designation or is authorized by the Chief of the Forest Service under specifically approved guidelines. There are 16 dams in Montana's wilderness areas that potentially threaten public safety, and others may exist in future wilderness designations.

Potential problems related to dams located in wilderness areas include (1) regulations governing wilderness areas may hinder dam maintenance, (2) rule implementation may impede dam maintenance, (3) dam owners may not understand the regulations affecting the use of mechanized equipment to maintain dams, and (4) dam owners, for any number of reasons, may not be willing or able to comply with wilderness area regulations. Any one or combination of these problems has, in some cases, led to dams deteriorating to the point where they may threaten public safety.

Options

1. Develop an informational program describing the application procedure for the use of mechanized equipment and other rules applicable to dam repair in wilderness areas.
2. Develop a training program for state and federal administrators to promote better implementation of regulations governing wilderness areas.
3. Develop more detailed guidance in the wilderness regulations promoting public safety through dam maintenance procedures.
4. Develop a public process, which may include the U.S. Forest Service, Bureau of Land Management, Department of Natural Resources and Conservation, dam owners, conservationists, consultant firms, and other interested persons, to identify problems and develop appropriate solutions.

Recommendation

Option 4. Since the nature and scope of the problem is unclear, further examination by affected parties is necessary.

PLAN IMPLEMENTATION

Legislative Action

The Water Policy Committee needs to reevaluate the acceptable degree of risk to public safety under the Montana Dam Safety Act. The Water Policy Committee also needs to consider the public policy of extending water reservations to private entities under the Montana Water Use Act.

The legislature needs to revise the Montana Water Use Act to extend the 10-year limit on developing water use permits associated with water storage development.

Administrative Action

The Department of Natural Resources and Conservation needs to evaluate federal, state, and local laws and regulations applicable to water storage to identify duplicative requirements, overlapping administrative authorities, and conflicting definitions and make reports and recommendations to the State Water Plan Advisory Council, Board of Natural Resources and Conservation, Legislative Water Policy Committee, and legislature as appropriate.

The Department of Natural Resources and Conservation needs to draft administrative rule changes to implement decisions of the Legislative Water Policy Committee.

The Department of Natural Resources and Conservation and the Montana Water Resources Center need to

develop and administer a targeted education program to: (1) encourage water reservations for multipurpose uses, and (2) promote awareness of legal requirements and sources of information applicable to the development and operation of water storage projects.

The Department of Natural Resources and Conservation needs to prepare, distribute, and regularly update (1) a listing of laws and regulations applicable to water storage, and (2) a booklet that describes the major requirements and identifies administrative agencies; both suitable for use by laypersons.

The Department of Natural Resources and Conservation needs to designate an individual to serve as an information coordinator for permitting and regulatory issues related to water storage development.

The Department of Natural Resources and Conservation needs to develop, in cooperation with appropriate federal and state agencies, a public process to identify problems associated with the maintenance of dams in wilderness areas and develop appropriate solutions.

Financial Requirements and Funding Strategies

The legislature needs to provide adequate funding for the Water Policy Committee to conduct a water storage regulation study. Approximately \$5,000 is needed during the 1991-92 biennium for the Department of Natural Resources and Conservation to print and distribute the water storage regulation directory and booklet.

Plan Implementation Summary

<u>Activity</u>	<u>Responsibility</u>	<u>Deadline</u>
Issue 1 - Duplicative Laws and Regulations Water Storage Regulation Study	DNRC	November, 1992
Issue 2 - Costs Related to Dam Safety Water Storage Regulation Study	Legislative Water Policy Committee DNRC	November, 1992
Issue 3 - Inability of Private Entities to Obtain Water Reservations Water Storage Regulation Study Public Education	Legislative Water Policy Committee DNRC and Montana Water Resources Center	November, 1992 January, 1992/ Ongoing
Issue 4 - Lack of Information about Water Storage Laws Designate a water storage coordinator Prepare and distribute water storage regulation directory and booklet Public education	DNRC Water storage coordinator Water storage coordinator	June, 1991 January, 1992 January, 1992/ Ongoing
Issue 5 - Inability to Repair Wilderness Area Dams Sponsor a public forum	Governor's Office DNRC U.S. Forest Service	December, 1990

BIBLIOGRAPHY

- Callens, Judith. February 1990. "Water Storage Regulations: A Summary." Paper prepared for the Water Storage Regulations Steering Committee, State Water Plan. Helena, MT.
- Ewer, David. November 17, 1989. "Financing Water Storage Projects with Bonds in Montana." Memorandum prepared for the Water Storage Financing Committee, State Water Plan. Helena, MT.
- Frank, Michael D., B. R. Beattie, and C. R. Taylor. December 31, 1985. "Economics of Water-Marketing Options for Montana," in Montana Environmental Quality Council Annual Report, Ninth Edition on Montana's Water. Helena, MT.
- Interstate Conference on Water Policy. January 6, 1987. *Survey of State Funding of Water Resources Development Projects: Fiscal Years 1985-1987*. Washington, D.C.
- McKinney, Matthew J. November 27, 1989. "The Economic Value of Instream Flows." Paper prepared for the Water Storage Financing Committee, State Water Plan. Helena, MT.
- Montana Department of Natural Resources and Conservation. January 1981. *Water Storage in the Big Hole: A Recommendation*. Helena, MT.
- _____. January 1989. *Reclamation and Development Grants Program: Project Evaluations and Recommendations for 1990-1991 Biennium and Status Report for Previously Funded Projects*. Helena, MT.
- _____. January 1989. *Renewable Resource and Water Development Programs: Project Evaluations and Recommendations for 1990-1991 Biennium and 1988-1989 Biennium Status Report*. Helena, MT.
- _____. October 1989. *Water Storage in Montana: A Background Report*. Helena, MT.
- _____. October 10, 1989. "Discussion Paper on Financing Water Storage Projects in Montana." Paper prepared for the Water Storage Financing Committee, State Water Plan. Helena, MT.
- Montana Water Resources Board. June 1968. *Summary of Potential Projects in Montana*. (Inventory Series No. 9). Helena, MT.
- U.S. Bureau of Reclamation. 1977. *Report on Potentials of Eastern Montana Basins*. Billings, MT.
- _____. February 1984. *Offstream Storage, Yellowstone River, Montana Appraisal Report*. Billings, MT.
- Western States Water Council. May 1984. *State/Federal Financing and Western Water Resource Development*. Salt Lake City, UT.